Working Paper No. 38

EMPLOYMENT IMPLICATIONS OF INCOME REDISTRIBUTION AND GROWTH :

A MICRO-ECONOMIC ANALYSIS IN THE BASIC NEEDS FRAMEWORK WITH REFERENCE TO METAL UTENSILS

R. C. SINHA

GIRI INSTITUTE OF DEVELOPMENT STUDIES
LUCKNOW

EMPLOYMENT IMPLICATIONS OF INCOME REDISTRIBUTION AND GROWTH : A Micro-Economic Analysis in the Basic Needs Framework with Reference to Metal Utensils

R.C. Sinha

1. The Background

Economic growth with income distribution favouring the poor has been a long standing premise for the development strategy in India. From the beginning of the seventies, however, the problem of poverty, as one of the facets of maldistribution of income, fetch much greater attention of the planners and policy makers. As a result, major thrust came to be placed on employment oriented process of development. This implied, as far as possible, the use of labour intensive technologies of production, assuming un/underemployment as the root cause of poverty.

In the context of fulfilment of basic needs, which is the central aim of the socio-economic development in India, the appropriateness of this kind of an approach cannot be taken for granted. It may be observed here that employment opportunities in labour intensive technologies are inferior, in terms of wage level, as compared to capital intensive technologies. To that extent the thrust on the use of labour intensive technologies would tend to arrest the pace of income redistribution process itself. Further, labour intensive technologies are also relatively less efficient and so less conducive to growth in production and income levels. It may therefore be argued

that the thrust on the use of labour intensive technologies may, over a period of time, retard or even negate the redistributive process. But since creation of employment and income opportunities in the short run seems possible only with greater use of labour intensive technologies, it would be interesting to examine as to whether it is redistribution or growth that would be more appropriate and tenable for generation of employment.

2. The Present Paper

In the above background an attempt has been made to empirically examine the employment implications of income distribution vis-a-vis growth within the basic needs framework. While various commodities are required for fulfilment of needs, they may be considered in the present context as comprising mutually exclusive commodity groups, each group representing the set of inter-substitutable items, fulfilling similar needs though with different proportions of essential and non-essential demand characteristics. The essentiality or otherwise of a product is perception based. For a poor society, however, the products with essential characteristics will primarily be those which fulfil certain functional requirement(s) at minimum cost. Quality-wise better products performing same functions would generally be purchased, given other things, by the people with relatively high incomes. In fact consumer preferences among commodities falling in the same broad functional group, is explanable in terms of the commodity characteristics. An

analysis of the extent of fulfilment of basic needs therefore necessitates identification of commodities which fulfil basic needs efficiently as compared to others from amongst inter-substitutable products. Moreover, since production technology differs among items with varying extent of basic need characteristics, a study of this kind can be made with reference to one particular commodity group, which is metal utensils in the present case. Metal utensils are used by all categories of people and cannot be considered besides the basket of goods fulfilling basic needs. It may be pointed out here that although non-metal utensils are to certain extent substitutable for metal utensils, the non-metal utensils have been excluded from the analysis, as they comprise a very small part of the total stock of utensils with rural as well as urban households.

The analysis in the paper is based on a consumer survey data collected by the Giri Institute of Development Studies, in the year 1979-80, in connection with a research project on appropriate products, sponsored by the ILO. The survey covered 400 rural households from five villages of district Sitapur and four of district Lucknow, and 200 urban households from different localities of Lucknow town. The purpose of spreading the sample to different villages was to control the influence of locational factors in the analysis. The households were selected from a village on a stratified sampling basis with a view to ensuring proper representation of various categories of farmers, labourers and artisans. Besides, 23 metal utensil manufacturing units located in Kanpur, Lucknow, Moradabad, Basti and Ghaziabad

districts were surveyed for collecting requisite data on production technology as was necessary for working out employment implications of income redistribution. The empirical analysis in this paper is divided into two parts : identification of basic need components of metal utensils, and an empirical examination of re-distribution-employment relationship, using a simulation model.

3. Identification of the Basic Need Components

The basic need components may be defined on a normative basis as certain minimum consumption requirement in a particular socio-economic context. However, unlike the case of food, minimum consumption norms for secondary products are generally not available. Same is the case with metal utensils. But since household expenditure on metal utensils as proportion to total expenditure is quite small and that the use of utensils is mainly food nexus, it appears reasonable to assume identity between the regularly used stock of metal utensils possessed on the average by the households, who are just able to meet their minimum dietetic requirement, and the minimum absolute requirement of the metal utensils. So far casually or occasionally used utensil stocks are concerned, they were found to constitute only 9 per cent of the total stock value. Such utensils may, by difinition, be considered as non-essential in the basic needs framework.

Alternatively, one may try to locate discontinuities in demand across various income groups. The discontinuities might occur mainly in terms of a shift in relative preference for a

commodity group and that in quality characteristics of the items demanded. It is generally believed that expenditure elasticity of an item tends to decline as the income rises above a level at which the absolute requirement of that item is met. The expenditure data on metal utensils does not, however, provide any such evidence. But significantly, a qualitative shift in demand for of metal utensils beyond a particular level is found to take place in terms of changes in functional priority structures on the one hand the quality of items purchased on the other.

Both the methods stated above have been used for defining the basket of metal utensils that may be deemed barely essential for an average rural as well as urban family. Three things are however important here before we come to the empirics. First, the total requirement of metal utensils is not fully reflected in the current monthly or annual household expenditure. For identification of utensils required for efficiently fulfilling the basic needs, therefore, inter-household variations in the quantity and quality of the current stocks have been analysed. Second, the quality differenciation among individual items can be made on the basis of various attributes like elegance, durability, brands, economy and efficiency. In case of metal utensils it was found that people generally buy unbranded items. Other quality characteristics are reflected reasonably well by the metal composition of the stock. The major metal categories in ascending order of hierarchy are iron, alluminium, brass, phool and stainless steel as considered in the present context. Third, the individual metal utensil

items have also been classified by in different functional groups. This is important because the functional priorities of demand for metal utensils would vary among different income groups. We have therefore classified the metal utensil stocks by broad functional categories - cooking (C), cooking accessories (CA), Serving (S), Serving accessories (SA) and storage/ carrying (SC).

The tables 1 to 4 shows the functional and metal-wise distribution of regularly used metal utensil stock across different per capita total expenditure (PCE) classes of rural and urban households. It may be noted that in case of utensils, which serve the most basic function of cooking, the average number per household across different PCE classes in rural areas remains in the vicinity of the overall average of 4.58, with a cut-off point at 4.72 (PCE 750-950). The average number of cooking utensils possessed by urban households varies from a very low of 1.84 (PCE below 350) to 9.59 (PCE 1600-2200), the figure for all classes taken together works out to 6.87. The per household numbers of serving utensils which perform the second basic function consistently increases with PCE level for both rural and urban households. The storage and carrying utensils do not vary much in number among the different PCE groups.

As regards metal base, the sample data shows iron, aluminium and brass most important in that order, making together over 87 per cent of the utensil stocks upto the PCE level Rs.600 in rural areas. These metals claim about three-fourths

of the value of the stock for the rural PCE Rs.600-2200, but the most important metal in this PCE range is brass and not iron. In the highest PCE class of Rs.2200 or more, stainless steel becomes the most important in value terms in the regularly used current stock in rural areas, followed by brass and iron. In case of urban households, aluminium is most important for PCE upto Rs.500, iron, aluminium and brass showing an almost equal share in the PCE group Rs.500-600. Brass becomes most important for PCE Rs.600-1250. Above Rs.1600 PCE, stainless steel comes out to be the major metal.

The behaviour of stock value of the regularly used metal utensils indicates a cut-off point between the PCE levels of Rs.750 and Rs.950 for rural households. The cut-off point in case of urban households is however not emerging clearly from the above analysis, probably because of relatively small sample size and sampling errors.

The identification of a minimally required stock of utensils has also been attempted on the basis of the assumption that households who are capable of fulfilling the basic food needs, would be in a position to maintain the basic minimum of metal utensils. Using the Planning Commissions estimate of per capita monthly expenditure (at 1973-74 prices) of Rs.53.00 for rural and Rs.62.00 (both at 1973-74 prices) for urban households as being just sufficient to fulfil a bare minimum of calorie requirement, the corresponding annual PCE levels at 1979-80 price worked out to Rs.817 for rural and Rs.1161 for urban areas. The cut-off point of Rs.817 for rural areas, thus found, conforms

well with the identified PCE range of Rs.750-950 based on the analysis of regularly used utensil stocks. But since the analysis of stocks across the urban PCE classes does not very clearly give a cut-off point, we have taken the above PCE norm of Rs.1161 to distinguish between the deprived and non-deprived urban households. This cut-off point falls in the PCE range Rs.950-1250. The stocks of utensils with these PCE classes may be taken to provide an idea of the minimum absolute requirement of metal utensils for rural and urban households. Accordingly a rural family of 5-6 persons would need 4 to 5 cooking utensils like tawa, karhai, batuli and bhagona, three cooking accessories such as cooking spoon, sansi and chimta, seven or eight serving utensils like thali, plate, bowls and tumblers, one or two spoons and about 4 utensils to be used for storage and carrying purposes. Most of these utensils would be of iron and aluminium. The minimum requirement for urban households would be higher as compared to rural households, depending upon the rural-urban differences in needs, perceptions and lifestyles. The number of food items cooked and served, the practice of taking meals jointly or separately or at different hours during a day and such other characteristics determine the requirement of utensils.

Following the above PCE criteria of distinguishing among the deprived and non-deprived groups of population, referred to subsequently as segment-1 and segment2, the survey data gives 62.68 per cent of the rural population and 52.80 per cent of the urban population falling in the segment-1. These estimates are on the higher side as compared with those now available

for the whole of Uttar Pradesh. But then this difference is not likely to distort the results of the empirical analysis aimed at exploring the relationship between income distribution and generation of employment opportunities.

4. Redistribution and Employment

4.1 The Approach

The effect of a distributional change on generation of employment has been visualised in the sequence : income-demand-employment. The starting point of the exercise is that inter-personal incomes get re-distributed towards ensuring fulfilment of basic needs of the poor in respect of metal utensils. The redistributive strategy, as indicated earlier would imply accrual of more than proportinate share of additional aggregate income to the population in segment-1. Since the average income level in the country is quite low, redistribution through transfers of income from rich to the poor does not appear to be a feasible proposition. The redistributive growth has been examined in five alternatives as are stated below.

A. 50 per cent of the poor in segment-1 achieve at least the desired minimum income level, while incomes of persons in segment-2 do not change.

B. 50 per cent of the poor in segment-1 achieve at least the desired minimum income level but in this process the population in segment-2 also experiences an increase of about 20 per cent in rural and 10 per cent in urban areas.

C. All the poor in segment-1 get shifted to segment-2, but incomes of those in segment-2 remain unchanged.

D. All the poor in segment-1 get shifted to segment-2, and income of people hitherto in segment-2 also increases by the magnitude as indicated in B.

E. 25 per cent of the poor in segment-2 achieve at least the desired minimum income level and income of the people in segment-2 also increases as in B.

Of the above assumed alternatives, C and D are limiting cases implying very high growth rates and use of very effective redistributive policy instruments. The situations A and B also do not appear to be very easy to conceive over a period of 10-15 years, yet they are important, so far they could exhibit a significant change in the incomes of the poor, for yielding the redistribution-demdnd-employment relationship rather sharply. The alternative E depicts a situation that can probably be planned over a period of 10 to 15 years.

Given the distribution of population by PCE classes, a redistributed growth may be visualised in terms either of stipulate growth in PCE levels of individual groups or of shifts of population to higher PCE classes. The two methods are conceptually not different. The latter method however allows for maintaining income slab identities of population from the given situation to the post redistribution situation. It also assumes the level and pattern of consumption of a PCE (on income) slab as given.

The re-distribution - employment relationship has been studied in a micro-economic framework, as indicated above, using the simulation technique. For each of the alternative re-distributive growth ends, the level and pattern of aggregate demand were estimated and the employment implication in terms of change in persondays embodied in production of metal utensils per unit of population was derived, assuming that, one, the change in production structure would be in accordance with that in consumption structure and two, the technologies of production for individual utensil items identified in terms of certain commodity characteristics would not change.

The effects on demand and employment resulting from a redistributive growth has been described as 'total effect' which has been decomposed into 'growth effect' and 're-distribution effect'. The 'growth effect' has been measured as the change in demand, and employment, due only to growth in the average PCE to the extent found against a particular redistributive growth alternative. For this purpose aggregative expenditure elasticities, worked out on the basis the survey data have been used in forecasting the aggregate demand. The pure 'redistribution effect' has been estimated indirectly, as the residue. It is assumed that changes in income levels would induce changes in current demand. We refer to demand of metal utensils as representing the current annual purchases, which are assumed to be uniquely determined for each PCE class.

The simulation model used in the exercise is described as below :

let P_i = Population size of ith PCE class

c_i = Per capita total expenditure of ith class

c_{ij} = Per capita expenditure incurred by the ith PCE class on jth item

C_j = Aggregate demand for jth item

C = Aggregative demand for the commodity group constituting the items j's

l_j = Labour coefficient for jth item

l = Aggregative labour coefficient for the commodity group constituting the items j's

(O) = Suffix denoting the observed distribution situation, and

(S) = Suffix denoting a simulated distribution situation

In the first stage of simulation the size of population in ith PCE class changes from $P_i(O)$ to $P_i(S)$, so that the aggregate demand for jth item from ith PCE class would change from $C_{ij}(O)$ to $C_{ij}(S)$, such that

$$C_{ij}(O) = c_{ij} P_i(O) \quad \ldots (1)$$

$$C_{ij}(S) = c_{ij} P_i(S) \quad \ldots (2)$$

The aggregate demand for jth item, C_j would be given by

$$C_j(O) = \sum_i C_{ij}(O) \quad \ldots (3)$$

$$C_j(S) = \sum_i C_{ij}(S) \quad \ldots (4)$$

The aggregate demand for all individual items in the commodity group, which is metal utensils in the present case would thus change from C(0) to C(S), such that

$$C(0) = \sum_i C_j(0) \quad \ldots (5)$$

$$C(S) = \sum_i C_j(S) \quad \ldots (6)$$

As the change in structure of demand, and so on the structure of technology, is implied with re-distribution, the aggregative labour coefficient changes from 1(0) to 1(S), where

$$1(0) = \sum_j l_j C_j(0) \,/\, \sum_j C_j(0) \quad \ldots (7)$$

$$1(S) = \sum_j l_j C_j(S) \,/\, \sum_j C_j(S) \quad \ldots (8)$$

The proportion of 1(S) to 1(0) would indicate the likely increase or otherwise in employment within the commodity sector viz., metal utensils, resulting from redistribution as 'total effect'. It may be made clear in this context that l_j should normally refer to jth item of production. We have however, identified the set of utensils by metal categories, so that jth item in fact refers to the jth metal. This was done for two reasons. First, it was not possible to conduct a large survey of production units. Second, the preliminary observations showed inter-metal variations in technology as quite significant.

For examining the 'income effect', expenditure elasticities were worked out by estimating five alternative forms of Engal functions - linear, hyperbolic, semi-log, double-log and log-inverse - visualising the per capita current expenditure

on metal utensils as a function of per capita total expenditure.. The estimates are shown in the Annexure 1. On the basis of usual statistical criteria and the plausibility of economic interpretation, the double-log function was found suitable, giving the aggregative expenditure elasticity (η) as 1.429 for rural and 1.358 for the urban households. In case of growth without redistribution the demand for the commodity group would change from C(0) to $C^1(S)$ such that

$$C^1(S) = 1 + \eta \left\{ \frac{PCE(S) - PCE(0)}{PCE(0)} \right\} C(0) \quad \ldots (9)$$

The assumption implied in the above expression is that inter-item priorities of demand, whthin the commodity group, do not change in any considerable measures because in case of an equal proportionate increase in incomes in all the PCE classes, the incomes of the poor, who represent the majority population, would increase only marginally. The aggregative ex-post labour coefficient $l^1(S)$ would then be given by

$$l^1(S) = l(0)\, C^1(S) / C(0) \quad \ldots (10)$$

4.2 The Results

The major aggregative characteristics of the observed and simulated distributions are compared in the Table 5. Accordingly, the percentage growth in the aggregate PCE level varies from about 12 to 26 in the urban area. The differences in these growth rates between rural and urban areas are marked because of the fact that the relative size of rural segment-1 is larger while the average PCE level is lower as compared to

the urban areas. Corresponding to the alternative re-distributive growth paths, the aggregate value demand for metal utensils per unit of population shows an increase, ranging among different alternatives from about 23 per cent to 50 per cent in rural area and from 15 per cent to 30 per cent in the urban area. Among the different simulations the demand forecasts differ not so much in cases of iron and aluminium utensils as in case of brass and stainless steel. This shows the hierarchy of the metals by their basic need characteristics where iron and aluminium rank higher than brass and stainless steel. The phool utensils, although still considered to be a status symbol in rural areas do not appear on the current demand because of scarcity conditions; while the production of phool utensils is facing an actual decline and their prices are quite high. It was also felt that the selected rural household either did not purchase phool utensils because of high prices or did not disclose to have purchased them because of the fear of theft. The demand for stainless steel utensils seems to be responsive particularly to increase in incomes of the population in higher income groups, i.e., segment-2.

Against the above mentioned five redistributive growth alternatives, the current annual expenditure on metal utensils is likely to increase significantly, by the smallest 23 per cent (Simulation A) to about 50 per cent (Simulation D) in

case of rural households, and between 15 per cent and 30 per cent in case of urban households (Table 6). As far the relative importance of various metal categories, the changes are visible in terms of percentage growth, but they are not very significant in terms of the pattern of demand. Yet it is seen that iron and aluminium would claim somewhat smaller percentage of expenditure on metal utensils in any of the simulations in both rural and urban areas. Brass and 'others' would claim a larger share in all the simulations, compared with the observed situation. Stainless steel is likely to claim relatively higher share in expenditure corresponding to simulations B, D and E, in both rural and urban areas. This indicates that the demand for steel utensils would come mainly from the population belonging to the segment-2. The case of phool for urban households is somewhat similar.

On the basis of the metal-wise distribution of demand shown in Table 6 and the labour coefficients (Iron 0.70, Aluminium 1.12, Brass 0.99, Phool 1.67, Stainless Steel 0.33, mandays per Rs.100 of output and 'others' 0.96 - the average) as estimated from the data collected from manufacturing units, the impact of income redistribution has visualised in Table 7. Accordingly, the 'total effect' of the redistributive growth works out, in terms of percentage increase in mandays of employment, to be from 23 to 50 in response to alternative change is demand from rural households and between 16 and 31 in case of urban households. The 'income effect' shown in Table 7 refers to the demand and employment implication of

growth in incomes of all the PCE classes in the same proportion as exhibited by each of the redistributive growth alternative. It is found that the 'income effect' is stronger than the redistributive growth (or total) effect. The percentage increase in the demand for metal utensils as a result of growth in income, given the distribution pattern, varies between 34 per cent to 60 per cent for rural and between 16 per cent to 35 per cent for urban households. The corresponding percentage increase in mandays of employment per unit of population is expected to be of the same order as that of the current demand. A redistribution without growth, as a hypothetical case, is thus likely to reduce the aggregate demand and employment in the metal utensil sector.

5. Conclusions

The present paper aimed at identifying the minimally required basket of metal utensils for fulfilment of basic needs on the one hand and examining the relationship between income-redistribution and employment through repercussions on demand on the other. The main conclusions emerging from the analysis in this paper are as below :

1. While the redistributive growth strategy in India laid emphasis on the use of labour intensive technology, such a strategy cannot be taken for granted towards fulfilment of basic needs unless the constraints in the availability of appropriate products are removed. This obviously necessitates identification of products which could fulfil bare necessities of life at minimum cost. The concept of appropriate

products is meaningful particularly when one refers to manufactured items of consumption, that are qualitatively different but are substitutable for one another and serve the same basic functions. It is possible to identify 'appropriate' products from amongst inter-substitutable items of consumption on the basis of their essential and non-essential characteristics.

2. There are quite a few commodity groups which can be considered on a priori basis, as essential for fulfilment of basic needs. They are, for instance, edible oils, footwear, cloth and consumer durables like furniture, transport equipments and metal utensil. The analysis relating to metal utensils in the present paper suggests that, the proportion of consumer expenditure on these commodities may not necessarily decline with increase in income levels, unlike other cases, for instance, of food items. This is because the higher income groups would like to buy better quality items and would thereby spend more than what is required to fulfil certain basic functions. For such consumer items the value demand function may appear to be continuous across income classes, while the physical characteristics of the items in demand may exhibit discontinuities.

3. The analysis of income redistribution and growth with reference to metal utensils sector showed that in the redistributive growth strategy, it is primarily the growth component which appears to be conducive for generation of employment. The redistributive component however seems to restrict the

growth of employment. This observation is consistent with the fact that marginal increases in incomes of the poor would be very much absorbed in meeting their food requirements, at the cost of the demand for consumer items from the non-poor segment of the population. Further since the labour intensive technologies are relative less productive and generally inefficient, the redistributive strategy emphasising the use of labour intensive technologies for generation of employment may be self-defeating.

4. Lastly, while recognising that growth per se would not automatically lead to the fulfilment of basic needs of the poor, a redistributive policy appears to be necessary. But a redistribution would be meaningful only if it is accompanied by a sufficiently high rate of growth. A redistribution at the cost of growth, on the other hand is likely to dampen the whole process of socio-economic development.

Table 1 : Per Household Possession of Regularly Used Stock of Metal Utensils (Rural)

Number (N) and Value (V) in Rs.

Per Capita Expenditure (Rs./annum)	Cooking		Cooking Accessories		Serving		Serving Accessories		Storage and Carrying		Total Value
	N	V	N	V	N	V	N	V	N	V	
1. below 350	4.15	33.20	2.10	4.45	5.80	52.90	0.70	0.40	2.90	37.15	128.00
2. 350-425	4.53	43.89	2.66	8.45	8.09	48.19	1.00	1.38	3.41	45.69	147.59
3. 425-500	4.02	41.14	2.38	4.76	6.02	55.99	1.46	1.89	2.73	41.04	144.82
4. 500-600	4.28	46.14	2.58	6.58	6.85	46.69	0.42	1.42	2.98	44.90	145.71
5. 600-750	4.36	59.54	3.02	7.48	6.80	58.70	1.28	8.80	3.54	54.64	189.15
6. 750-950	4.72	56.66	3.16	8.54	7.54	77.92	0.66	0.79	3.30	53.43	197.34
7. 950-1250	4.36	58.59	3.53	13.17	7.33	68.52	1.31	5.90	4.11	68.93	215.11
8. 1250-1600	5.54	75.10	3.72	9.99	10.36	107.27	2.46	4.05	4.49	79.64	276.06
9. 1600-2200	6.10	69.00	4.10	10.88	11.62	138.60	2.81	0.72	5.00	77.35	296.54
10. 2200 or above	4.67	56.50	3.00	8.00	11.33	114.00	4.67	4.67	4.33	133.00	316.17
All Classes	4.58	54.18	3.02	8.32	7.59	69.07	1.22	3.31	3.53	55.95	190.82

Table 2 : Distribution of Current Stock Value of Utensils by Metal Categories (Rural)

Per Capita Expenditure (Rs./annum)	Percentage						
	Iron	Alumi-nium	Brass	Phool	Stain-less Steel	Others	Total
1. Below 350	35.95	28.89	15.84	-	0.42	18.90	100.00
2. 350-425	38.48	33.92	14.22	3.58	0.60	9.20	100.00
3. 425-500	33.44	20.55	21.13	1.10	0.82	22.96	100.00
4. 500-600	35.37	28.06	24.15	0.72	0.76	10.94	100.00
5. 600-750	30.58	16.57	33.85	0.57	0.77	17.66	100.00
6. 750-950	26.81	19.65	26.73	6.14	1.26	19.41	100.00
7. 950-1250	26.91	17.47	31.73	1.13	5.73	17.03	100.00
8. 1250-1600	24.22	15.40	26.39	2.01	5.83	26.15	100.00
9. 1600-2200	19.94	7.74	42.82	-	8.23	21.27	100.00
10. 2200 or more	18.84	5.71	24.25	-	46.87	4.33	100.00
All Classes	28.88	19.18	27.94	1.83	3.88	18.29	100.00

Table 3 : Per Household Possession of Regularly Used Stock of Metal Utensils (Urban)

Number (N) and Value (V) in Rs.

Per Capita Expenditure (Rs./annum)	Cooking		Cooking Accessories		Serving		Serving Accessories		Storage/ Carrying		Total Value
	N	V	N	V	N	V	N	V	N	V	
1. below 350	1.84	9.17	2.75	8.26	5.51	16.51	-	-	-	--	33.95
2. 350-425	-	-	-	-	-	-	-	-	-	-	-
3. 425-500	2.94	54.41	3.68	22.06	4.41	44.12	3.68	5.88	3.68	42.65	169.12
4. 500-600	4.91	38.04	1.23	3.68	7.36	41.10	1.84	0.92	1.23	19.63	103.37
5. 600-750	6.47	120.98	3.85	20.46	11.36	154.20	3.15	5.77	2.45	42.48	343.88
6. 750-950	6.37	75.74	4.01	20.86	10.38	82.29	4.19	5.02	3.67	49.39	233.29
7. 950-1250	6.28	134.45	3.92	18.52	12.90	197.22	3.16	5.50	3.48	59.92	415.61
8. 1250-1600	8.82	205.88	5.14	29.29	15.15	182.23	6.43	11.75	3.95	63.55	492.65
9. 1600-2200	9.59	466.94	5.13	26.74	30.82	556.74	12.25	27.14	4.69	64.49	1142.04
10. 2200 or more	5.26	342.63	3.68	23.16	36.32	709.47	9.47	23.68	4.21	84.21	1183.16
All Classes	6.87	164.58	4.18	21.69	14.55	203.47	4.97	9.00	3.51	55.05	453.91

Table 4 : Distribution of Current Stock Value of Utensils by Metal Categories (Urban)

Per Capita Expenditure (Rs./annum)	Percentage						
	Iron	Alumi-nium	Brass	Phool	Stain-less Steel	Others	Total
1. Below 350	10.81	89.19	-	-	-	-	100.00
2. 350-425	-	-	-	-	-	-	-
3. 425-500	30.00	70.00	-	-	-	-	100.00
4. 500-600	36.80	33.53	-	29.67	-	-	100.00
5. 600-750	13.41	5.97	57.49	7.44	15.69	-	100.00
6. 750-950	13.60	18.88	42.89	8.48	16.15	-	100.00
7. 950-1250	14.82	15.52	43.80	14.28	11.49	0.09	100.00
8. 1250-1600	25.68	21.18	26.71	3.29	21.35	1.79	100.00
9. 1600-2200	5.82	22.09	28.09	3.86	39.97	0.17	100.00
10. 2200 or more	5.74	24.68	12.36	2.41	54.81	-	100.00
All Classes	16.18	19.41	34.27	7.21	22.81	0.12	100.00

Table 5 : Aggregative Characteristics of Observed Vis-a-vis Simulated Distributions

Description	Observed Distribution	Simulations				
		A	B	C	D	E
I. RURAL						
1.1 percentage of Population in segment	62.68	31.34	31.34	-	-	47.01
1.2 Per capita total annual expenditure (PCE) in Rs.						
a) Segment-1	536.02	688.16	688.16	-	-	649.23
b) Segment-2	1244.45	1128.95	1206.66	1081.98	1135.34	1292.30
c) All Classes	800.43	990.81 (23.78)	1044.17 (30.45)	1081.98 (35.17)	1135.34 (41.84)	990.00 (23.68)
1.3 Gini Coefficient*	0.326	0.187	0.212	0.136	0.160	0.250
II. URBAN						
2.1 Percentage of population in segment-1	52.80	26.40	26.40	-	-	39.60
2.2 Per capita total annual expenditure (PCE) in Rs.						
a) Segment-1	800.73	877.08	877.08	-	-	876.58
b) Segment-2	1708.14	1549.68	1646.75	1472.06	1543.51	1715.80
c) All Classes	1229.05	1372.12 (11.64)	1443.57 (17.45)	1472.06 (19.77)	1543.51 (25.59)	1383.48 (12.56)
2.3 Gini Coefficient*	0.261	0.194	0.215	0.137	0.158	0.239

* based on semi-decile distribution

Note : Figures in brackets denote the percentage increases over the observed values

Table 6 : Changes in the Demand for Metal Utensils Resulting from Redistributive Growth

(Rs. per annum per 100 population)

Area/Metal Category	Observed Distribution	Simulations				
		A	B	C	D	E
I. RURAL						
Iron	25.20	28.07 (11.39)	26.80 (6.35)	30.94 (22.78)	29.66 (17.70)	25.53 (1.31)
Aluminium	58.59	69.11 (17.96)	65.84 (12.37)	76.47 (30.52)	73.20 (24.94)	62.75 (7.10)
Brass	59.57	74.48 (25.09)	87.34 (46.69)	83.57 (40.36)	96.42 (61.94)	82.43 (38.44)
Phool	-	-	-	-	-	-
Stainless Steel	6.18	7.03 (13.75)	10.91 (76.54)	6.47 (4.69)	10.35 (67.48)	10.80 (74.76)
Others	71.91	92.72 (28.94)	108.70 (51.16)	105.59 (46.84)	121.58 (69.07)	101.55 (41.22)
All Metals/Items	221.42	271.41 (22.58)	279.59 (35.30)	303,04 (36.86)	331.21 (49.58)	283.06 (27.84)
II. URBAN						
Iron	66.58	68.72 (3.21)	69.92 (5.02)	69.17 (3.98)	70.37 (5.69)	69.16 (3.88)
Aluminium	82.62	89.93 (7.55)	86.31 (3.22)	92.48 (10.60)	88.96 (6.39)	85.81 (2.62)
Brass	69.09	93.65 (35.55)	94.28 (36.46)	107.82 (56.06)	108.45 (56.97)	86.57 (25.30)
Phool	9.13	9.30 (1.86)	11.89 (30.23)	9.30 (10.86)	11.89 (30.23)	11.89 (30.83)
Stainless Steel	61.77	63.05 (2.07)	73.11 (18.36)	63.63 (3.01)	73.70 (19.31)	72.10 (17.21)
Others	101.79	126.00 (23.78)	140.88 (38.10)	141.22 (38.74)	156.09 (53.35)	128.88 (26.61)
All Metals/Items	390.98	450.65 (15.26)	476.39 (21.85)	483.62 (23.69)	509.36 (30.28)	454.71 (16.30)

Note : Figures in brackets show percentage increases over the observed value.

Table 7 : Redistributive Growth Effects, Income Effects and Net Redistribution Effects on Demand and Employment

Description	Simulations (Rural)					Simulations (Urban)				
	A	B	C	D	E	A	B	C	D	E
1. Increase in average PCE over the observed (%)	23.78	30.45	35.17	41.84	23.68	11.64	17.45	19.77	25.59	12.56
2. Change in aggregate demand for metal utensils (%)										
2.1 Total Effect	22.58	35.30	36.66	49.58	27.84	15.26	21.85	23.69	30.28	16.30
2.2 Income Effect	33.98	43.51	50.25	59.79	33.84	15.81	23.70	26.85	34.75	17.06
2.3 Net Redistribution Effect	(-)11.40	(-)8.21	(-)13.59	(-)10.21	(-)6.00	(-)0.55	(-)1.85	(-)3.16	(-)4.47	(-)0.76
3. Change in Mandays required in response to change in current demand profile										
3.1 Total Effect	23.38	34.80	38.11	49.54	27.27	16.14	21.59	25.35	30.80	15.74
3.2 Income Effect	33.98	43.51	50.25	59.79	33.84	15.81	23.70	26.85	34.75	17.06
3.3 Net Redistribution Effect	(-)10.60	(-)8.71	(-)12.14	(-)10.25	(-)6.57	(-)0.33	(-)2.11	(-)1.50	(-)3.95	(-)1.32

Annexure 1

Engel Function Estimates

Area/Form of Function	Estimates					
	a	b	R^2	SE	t	η
Rural (d.f = 127)						
1. Y = 1 + bx	-0.05	0.0097	0.288	0.0014	7.16	1.006
2. Y = a - b/x	19.87	-7462.8	0.316	976.47	7.64	1.035
3. Y = a + b log x	-63.73	25.123	0.350	3.039	8.27	3.003
4. log Y = a+b log x	-3.39	1.428	0.605	0.1024	13.95	1.429
5. log Y = a-b/x	1.42	-465.16	0.656	29.954	15.53	0.534
Urban (d.f = 89)						
1. Y = a+bx	2.868	0.0054	0.106	0.0033	1.65	0.696
2. Y = a-b/x	29.27	-18990.6	0.553	3563.8	5.33	1.646
3. Y = A = b log x	-37.24	15.360	0.143	7.838	1.95	1.622
4. log Y = a+b log x	-3.31	1.358	0.483	0.2927	4.64	1.358
5. log Y = a - b/x	1.29	-459.6	0.548	98.27	4.68	0.377

Note : Y = Per capita expenditure on metal utensils
x = Per capita total expenditure (PCE)
R^2 = Coefficient of multiple determination
SE = Standard error
t = The statistic 't'
η = Expenditure elasticity for metal utensils

The estimates are based on household level observations

PUBLICATIONS

I Books, Project Reports and Occasional Papers :

1. TS Papola, VN Misra, HS Verma, RC Sinha and A Joshi : *Studies on Development of Uttar Pradesh*, GIDS, 1979, (Distributed by Universal Book Distributing Company, Lucknow)
2. TS Papola : *Small Scale Industries in Uttar Pradesh* (Mimeographed Report, 1978)
3. : *Spatial Diversification in Manufacturing Activity* (Mimeographed Report, 1978).
4. : *Urban Informal Sector in Developing Economy* (Published by Vikas Publishing House Pvt. Ltd., New Delhi, 1981)
5. HS Verma : *Post-Independence Change in Rural India* (Published by Inter-India Publication, New Delhi, 1981).
6. TS Papola, RS Mathur : *Inter-Sectoral Linkages in Metal Engineering Industry in Kanpur* (Mimeographed Report, 1979). Also brought out as a *Working Paper* (WEP 2-22/WP) by ILO, Geneva, December 1979.
7. HS Verma : *Impact of Family Structure on Management of Enterprises* (Ph. D. Thesis, 1979).
8. TS Papola : *Spatial Diversification of Industries : A Study in Uttar Pradesh* (Published by Allied Publishers, New Delhi).
9. TS Papola, VN Misra : *Studies in Rural Industrialisation : Issues, Data Requirements and Analysis* (Mimeographed Report, 1980).
10. TS Papola : *Production of Woolen Carpets in Kumaon and Garhwal* (Mimeographed Report, 1980)
11. : *Impact of Concessional Finance on Industrial Development of Backward Areas* (Report, 1980). Mimeographed by IDBI, Bombay.
12. MS Ashraf : *Economics of Cloth Printing in Decentralised Sector* (Mimeographed Report, 1980).
13. : *Report of the Seminar on Development of Hill Areas* (Printed Report, GIDS, 1980)
14. TS Papola, RC Sinha : *Income Distribution, Technology and Employment :* A Study of Metal Utensils in India in the Basic Needs Framework.
15. TS Papola, RC Sinha : *Road Transport and Economic Development : A Study in Uttar Pradesh* (Institute of Developing Economics, Tokyo, 1981)
16. TS Papola : *Rural Industrialisation :* Approches & Prospects (under Publication with Himalaya Publishing House, Bombay)
17. TS Papola, RT Tewari : *Impact of Concessional Finance on Industrial Development of Backward Areas :* (A Study in Uttar Pradesh)
18. HS Verma : Land as a Resource for Developing a New City : Rhetoric, Operationalization & Lessons From New Bombay, (Report 1981)
19. : Greater Bombay : Logic, Class Basis and Methodology of its growth and Expansion.